High-Performance Data Analysis Tools for Sun-Earth Connection Missions, Phase II
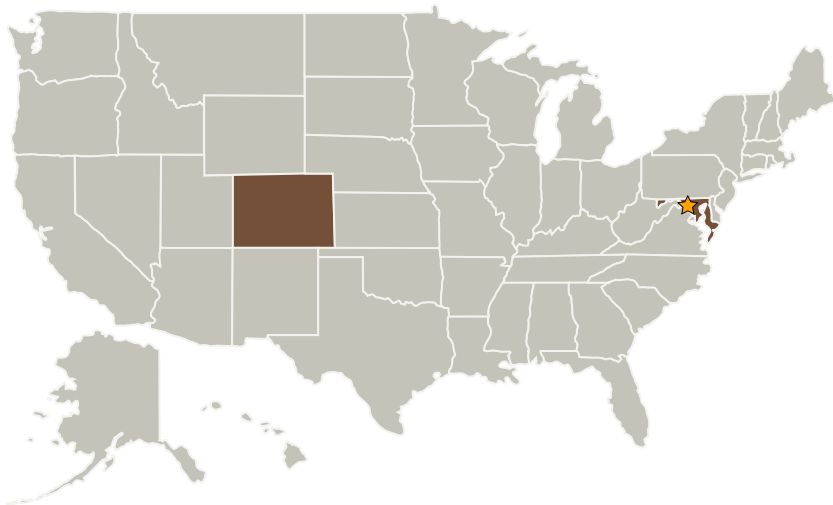
Completed Technology Project (2005 - 2007)

Project Introduction

The Interactive Data Language (IDL) is a standard tool used by many researchers in observational fields. Present day Sun-Earth Connection missions like SOHO, or future missions, including the Solar Dynamics (SDO) almost exclusively analyze their data in IDL. However, the increasing amount of data produced by these missions, and the increasing complexity of image processing algorithms, requires higher computing power. Cluster computing is a cost-effective way to increase the speed of computation. Enhancing IDL to work on clusters gives scientists access to increased performance in a familiar programming environment. We propose to develop a tool suite that enables IDL to benefit from cluster systems. We demonstrated in Phase I the availability of all key technologies by developing prototype implementations. The main emphasis of the Phase II will be to enhance the interactivity of the tools and advance the suite to market-ready quality. Increased data analysis power enables e.g. near real-time data analysis for space-weather prediction or reduces the response time for analyzing data on demand, as desirable in virtual observatory environments. The wide spread of IDL allows scientists from other fields to benefit from the increased execution speed.

Primary U.S. Work Locations and Key Partners

High-Performance Data Analysis Tools for Sun-Earth Connection Missions, Phase II

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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Goddard Space Flight Center (GSFC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Organizations Performing Work	Role	Type	Location
⭐Goddard Space Flight Center(GSFC)	Lead Organization	NASA Center	Greenbelt, Maryland
Tech-X Corporation	Supporting Organization	Industry	Boulder, Colorado

Primary U.S. Work Locations	
Colorado	Maryland

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX11 Software, Modeling, Simulation, and Information Processing
  └ TX11.6 Ground Computing
     └ TX11.6.7 High Performance Data Analytics Platform